Thomas Carey

Engineer, Designer, Creator

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https://tmcarey.com

https://github.com/tmcarey

https://www.blastfurnacegames.com/

Skills

<u>Game Technology</u>: Unity, Unreal Engine, Geometry Processing, OpenGL, Ray Tracing

<u>Mathematics</u>: Vector Analysis, Complex Analysis Linear Algebra, Algorithm Analysis

<u>Programming</u>: C++, C#, GLSL, SQL, JavaScript, Algorithm Design, Optimization, Data Structures

<u>Communication</u>: Experienced Leading Team Meetings, Delegating Tasks, Technical Writing, Documentations

<u>Art and Design</u>: Blender (Modeling, Animation, Rigging), Photoshop, Illustrator, Unity

<u>Full Stack Web Development</u>: Database design (MongoDB, PostgresQL, MySQL, DynamoDB), authentication/security architecture, ReactJS, NextJS, Typescript, Web Design

Relevant Coursework

Matrices and Linear Transformations Computer Graphics Parallel and Sequential Algorithms Understanding Game Engines Game Design, Prototyping, and Production Advanced Game Studio

Software Development

Amazon / Jun 2022 - Aug 2022

Software Development Engineer - developed a system which notified developers across Amazon when new internal translations were ready. Project finished ahead of schedule and beyond original scope.

Linear Air Taxi / Jan 2021 - Present

Consultant for a rework of the company's frontend, focused on modern (mobile-first) design and SEO. Completely redesigned the database schema and backend DB interface to support performant group queries which reduced costs and increased conversion.

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Education

Carnegie Mellon University, School of Computer Science.

Bachelor of Science, Computer Science.

Minor in Game Design.

2019 - 2023

Game Development

Game Creation Society / Sep 2019 - Present

Designed and delivered course materials for the accredited Unity Student-Taught Course at CMU.

Worked on several student-led games and game jams.

Led a team of 5-10 club members over the course of a year to develop a fully-fledged MMO within GCS, which pushed the boundaries of what was possible within the club. See page 2 for more details.

Horizon Blockchain Games / Aug-Oct 2021

Created a cutscene and key-frame animation system which allowed designers to easily edit dynamic cutscenes and enabled video-like seeking for viewers.

Research

CMU Graphics Dept / Sep 2021 - August 2022

Work with the Geometry Collective to solve novel mathematics and geometry problems in Computer Graphics using vector analysis and complex analysis.

Built a marching tetrahedrons renderer for visualizing tet meshes, used in papers submitted to SIGGRAPH.

Contributed to the open-source 3D data analyzer <u>Polyscope</u> in Python and C++.

CSH Laboratory / Sep 2017 – Feb 2018

Modeled neurochemistry of learning behavior of live mice using ML on acetylcholine data, and built a psychometry platform which resulted in multiple successful and large-scale experiments.

Personal Projects

Over ten thousand hours teaching myself to make games and game tools for the last 12 years.

Created a ray-traced voxel engine using OpenGL.

Built several VR prototypes around perceived object weight and motion.

Read more on page 2

Blast Furnace Games

Read a more detailed report at this link:

https://www.blastfurnacegames.com/devlog/intro

Starting from the Game Creation Society at Carnegie Mellon University, I led a team of 12 developers to build a fully-functioning FPS MMO experience which utilized Unity, MongoDB, AWS (Gamelift, Lambda, API Gateway). We won first prize at the Game Creation Society's Game Release Showcase.

This project required developing a full FPS shooter within Unity, as well as building a full web stack that integrated Steam authentication. The backend was written in Golang and utilized MongoDB.



Full tiled inventory system with clothing and a 3rd person preview:



Co-op multiplayer experience with a robust networked animation system:



Unique procedural world generation leveraging Wave Function Collapse:



Unique mechanics and procedural animation:



I led the design and engineering work along with management and production of the game for the last 6 months - work is still ongoing.

Industry Software Consulting

Over the last 6 years I have worked with several software companies as a consultant and engineer, including:

- <u>Workrails</u>
 - Built the product's first integration with Salesforce
 - Developed and consulted on integrations with customers including Autodesk and Kustomer
- <u>Nebula Academy Unlock The Box</u>
 - Led a team to build a prototype educational app
- <u>Cold Spring Harbor Labs Online</u>
 <u>Psychometry</u>
 - Designed and developed an online platform for running psychometric experiments
- <u>Hourly.com</u>
 - Designed and developed a platform for simplifying the hiring process for non-desk workers
- <u>Linear Air Taxi</u>
 - Delivered an overhaul of the company's frontend and SEO solutions
- <u>Amazon.com</u>
 - Designed and delivered a service to notify developers when new translations were needed

These experiences have given me a very well rounded experience working with software companies, particularly the soft skills that heads-down engineers don't often get to practice at larger companies.

I've been able to manage my own teams and consult and work on high level solutions to important problems, such as:

- Custom token/key authentication layers
- Database design problems
- SEO and conversion optimization
- Distributing high load on hardware
- Weighing costs of engineering tasks and technical debt